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# Ethnic Boundaries in High School Students' Networks in Flanders and the Netherlands



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**abstract:** Ethnic boundaries were tested in students' networks in 34 Flemish and 19 Dutch high schools. Each network consisted of a school cohort in an intermediate level of education (track). While students from the native majority predominantly had friendships within their own ethnic category, minority students often had more inter-ethnic than intra-ethnic friendships. However, a multilevel  $p_2$  model for analysing the networks showed that this was due mainly to the quantitative dominance of native students in the networks. Native students were more inclined than minority students to engage in inter-ethnic friendships. The study found ethnic boundaries to be stronger in the Dutch networks than in the Flemish networks. It is unclear whether this is due to methodological reasons or to more substantial differences between the Netherlands and Flanders.

**keywords:** adolescents ♦ Flanders ♦ friendship networks ♦ inter-ethnic ♦ Netherlands

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## **Introduction**

Since the 1950s, integration politics in western countries have often been directed at ethnic mixing of school populations. School segregation is a political issue in both the Netherlands (Vermeij, 2006) and in Flanders, the northern region of Belgium (Laquière, 1997). Politicians and policy-makers who advocate ethnic mixing of school populations generally implicitly or explicitly refer to Allport's contact hypothesis. According to Allport (1954), inter-ethnic contact reduces prejudices and supports social integration if, and only if, four conditions are met: (1) the participants have the same status level; (2) they have (some) common goals; (3) these goals can only be reached by cooperation; and (4) integration is supported by authorities. Allport's hypothesis is sustained by empirical evidence (Pettigrew, 1998; Pettigrew and Tropp, 2000). However, it is questionable whether Allport's conditions are met in Flemish and Dutch secondary schools. It is true that no official status differences exist within school classes in Flanders or the Netherlands. It is also understood that students prefer a friendly school climate, to which end they need each other (Kassenberg, 2002), and that authorities usually encourage social integration. However, when networks are strongly segregated, common goals can be reached within small parts of the population, and it might even be profitable to bully or discriminate against fellow students. Also, authorities have little influence on friendship formation and might even turn a blind eye to inter-ethnic discrimination.

In this article, we investigate the tenability of Allport's contact hypothesis. We first test the existence of ethnic boundaries, i.e. whether students have more intra-ethnic friendships than expected, given the opportunity for such friendships in the network. Second, we assess social discrimination by testing whether such boundaries can be explained by students' inclinations to choose intra-ethnic relationships over inter-ethnic ones. Third, we compare the findings of Flemish and Dutch schools, keeping in mind that they represent different ethnic configurations.

## **Theory and Hypotheses**

### ***Ethnic Boundaries***

A common feature in theories on the emergence of inter-ethnic relationships is the idea that such relationships can only arise when people from one ethnic group have contact with people from another group. Authors like Allport (1954) and Pettigrew (1986) have argued that contacts between members of different groups within a cooperative framework diminish prejudices and strengthen positive attitudes about the other group. This will enhance the chance that people will engage in positive

relationships, like friendships. It should be noted that schools generally provide cooperative frameworks for contacts between students and it could be argued that the chance that friendships develop is greater when the opportunity for contact that students have is greater. According to this line of thinking, the opportunity structure for students to have contact with students of other ethnic groups should predict the likelihood of establishing inter-ethnic relationships, to a large extent. Because only contact opportunity plays a decisive role here, this hypothesis is called the 'opportunity hypothesis' (Hallinan, 1982). According to this hypothesis, a student's intra-ethnic friendships should be proportional to the number of fellow students of the same ethnic category in the school network. When, for instance, a student is of native origin, and 70 percent of the fellow students are native, the contact hypothesis predicts that 70 percent of the student's friends are also native.

However, the opportunity hypothesis has been criticized by some authors, who state that the process of transition from availability into positive relationships (such as friendships) is not neutral to ethnic background. It has been argued (Kandel, 1978; McPherson et al., 2001) that people prefer to interact with people who are like themselves. Members of the same ethnic group are expected to be alike with respect to cultural values, traditions, experiences or opportunities. Thus, a preference for intra-ethnic relationships could be explained by the social identity theory (Tajfel and Turner, 1979), which states that people need to belong to a group with a specific identity. For many people, ethnicity serves this purpose. A social identity motivates people to accentuate differences rather than similarities with members of different groups, augmenting prejudice rather than diminishing it, and thus preventing inter-ethnic relationships from developing. Following social identity theory, we would predict ethnic boundaries: i.e. given the opportunity, students would engage more often in intra-ethnic than in inter-ethnic friendships.

Most empirical research about intra-ethnic relationships cannot be used for testing the existence of ethnic boundaries. Many authors (Clark and Ayers, 1992; DuBois and Hirsch, 1990; Patchen, 1982; Schofield, 1979, 1982, 1986; Verkuyten et al., 1996) have studied in-group and out-group preferences. However, preferences for relationships can be very different from reality: natives (Dutch and/or Flemish) may indicate that they are interested in engaging in inter-ethnic friendships without having them. Consequently, many studies have focused on actual relationships. Note that ethnic boundaries can only be assessed when a respondent's intra- and inter-ethnic relationships are known, and when these can be compared to the opportunity to engage in both types of relationships in the respondent's environment. Therefore, studies of inter-ethnic relationships without comparison to the number of available relationships (e.g. Howes and Wu, 1990;

Woods and Grugeon, 1990) cannot be used to test Hypothesis 1 (below). Studies of personal networks and other studies of numbers of intra- and inter-ethnic friendships that did not control for the opportunity structure (e.g. DuBois and Hirsch, 1990; Fong and Isajiw, 2000; Patchen, 1982) are not informative for the issue of ethnic boundaries. By studying entire networks, such as school classes or entire school populations, opportunity structures can be controlled for, with the advantage of using ethnic composition as an approximate measure for opportunity. Hallinan was one of the first researchers who studied entire classroom networks (Hallinan, 1982; Hallinan and Smith, 1985; Hallinan and Williams, 1989). Also others (Joyner and Kao, 2000; Rícan, 1996; Shrum et al., 1988) took opportunity into account, usually by using segregation scores and several group-level measures as explanatory variables in statistical models predicting the probability of having an inter-ethnic friendship tie.

In the present article, we assess ethnic boundaries in school classes by comparing the density of intra-ethnic friendships, i.e. the number of intra-ethnic friendships divided by the number of possible intra-ethnic friendships within the class, to the density of inter-ethnic friendships, i.e. the number of inter-ethnic friendships divided by the number of possible inter-ethnic friendships in the class.

*Hypothesis 1:* Flemish and Dutch students' networks exhibit ethnic boundaries, i.e. the density of intra-ethnic friendships is higher than the density of inter-ethnic friendships.

### **Causes of Ethnic Boundaries**

Social identity theory gives an explanation for the existence of ethnic boundaries, through students' preference for intra-ethnic friendships. However, there may be more reasons why students deflect from inter-ethnic relationships. For instance, Granovetter (1986) states that peer pressure might prevent inter-ethnic relationships from developing, even if some students like (some) others with a different ethnicity. Regardless of the exact mechanism, the outcome remains the same: students have an individual inclination to engage more in intra-ethnic than in inter-ethnic relationships.

Empirical research has not been conclusive about the effect of individual inclinations on ethnic boundaries, not even studies of complete networks. The main reason was that authors did not control for competing explanations of boundaries. Gender effects in particular can be expected to compete with ethnicity effects. Consider, for instance, a Flemish classroom network including a cluster of four Moroccan girls and a cluster of 12 native Flemish boys; the classroom network is strongly segregated by ethnic lines. Note that gender is shown to be a stronger divider than ethnicity (Baerveldt and Snijders, 1994; Hallinan and Smith, 1985; Hallinan and Williams, 1989; Rícan, 1996;

Schofield, 1982; Schofield and Sagar, 1977; Shrum et al., 1988; Smith and Schneider, 2000); consequently, it is highly possible that the ethnic boundaries in the classroom network are caused by the inclination to choose same-sex rather than intra-ethnic relationships. Findings about the interaction effects of gender and ethnicity are not conclusive: some authors (Kistner et al., 1993; Schofield, 1982; Schofield and Sagar, 1977; Smith and Schneider, 2000) reported that ethnic similarity is more important for girls than for boys, but Patchen (1982) found that boys show more negative inter-ethnic behaviour.

One can only assess the effects of inclinations to choose for intra-ethnic relationships on ethnic boundaries under certain conditions. Information about existence and non-existence of relationships between pairs of students and their personal characteristics (like ethnicity and gender) should be available *and* analysed simultaneously. In the network tradition, this is called dyadic analysis. Unfortunately, dyadic studies are costly to perform, and difficult to analyse. Although Clark and Ayers (1992) used a dyadic approach, they omitted the dyads that did not result in a friendship, and therefore could not analyse effects on friendship formation. Hallinan and Williams (1989) and Kubitschek and Hallinan (1998) improved analysis methods by using weighted logistic regression to model the presence or absence of a dyadic relationship, using individual and dyadic explanatory variables. To avoid the problem of dependence between dyads, caused by the fact that the relationships reported by one student cannot be regarded as independent from each other, they took a sample from the many available dyads; this sample was subsequently corrected by the weighted analysis. Only a few recent studies (Baerveldt et al., 2004; Moody, 2001; Mouw and Entwisle, 2006; Quillian and Campbell, 2003; Vermeij, 2006) controlled for other effects when studying the effect of ethnic differences on friendship formation. They all identified the presence of ethnic boundaries, as well as other factors affecting friendship choices.

In the present study, we follow the approach introduced by Baerveldt et al. (2004), and test students' inclinations to engage more in intra-ethnic than in inter-ethnic friendships within high school classes by controlling for other explanations of friendship choice. The literature indicates that controlling for gender effects is necessary. We also control for reciprocity effects because ethnic boundaries may be amplified by students' dispositions to reciprocate friendships, whatever their ethnic status. Finally, we control for the importance of school friends. School friends may be less important for a student either because he or she already has a satisfying number of relationships outside school, or because friends outside school are rated as more important (for whatever reason).

*Hypothesis 2:* Flemish and Dutch high school students are inclined to engage more in intra-ethnic than in inter-ethnic friendships in school (thus adding to ethnic boundaries).

### ***Flanders and the Netherlands***

In the present study, we compare social discrimination in high school networks in Flanders (the northern region of Belgium) and the Netherlands. We were able to use data from a Flemish and a Dutch study where the same network measures in similar school networks were used. The Dutch data (DSBS) stem from the school year 1995/6, and the Flemish data (VLO) from 2004/5. Why would such a comparison be interesting? The main motivation is that macro conditions, like economic factors and political conflict, are known to influence social discrimination. The macro conditions for the networks studied in the two countries were similar in most respects, but there were also some important differences. To start with the similarities: Belgium and the Netherlands are neighbouring countries in the northwest of the European Union. Dutch is the language spoken both in Flanders, the northern part of Belgium, and the Netherlands. Flanders and the Netherlands have similar levels of welfare, employment and economic development. The school systems have much in common, like a strict distinction between primary and secondary schools, the dominance of public schools and a track system at secondary school. There are also many similarities regarding the development of migration. The ethnic diversity of the population in both countries has increased since the 1960s. In the 1960s, the first immigrants from Turkey and Morocco arrived, when the labour market in Belgium and the Netherlands needed extra workers. During the early 1970s, the Netherlands faced a migration stream from Surinam, a former Dutch colony that gained independence in 1975, and from Turkey and Morocco (Vermeij, 2006). The five largest groups of immigrants in Belgium are from Italy, France, the Netherlands, Morocco and Turkey. Italian immigrants arrived since the 1950s to replace Belgian miners. Although their numbers have been decreasing since the 1980s, they remain the largest ethnic minority community in Belgium. Like in the Netherlands, Moroccan and Turkish immigrants constitute the largest communities of immigrants from non-western countries (Grimmeau, 1992).

The quantitative levels of immigration seem to differ between the countries. A sociodemographic study by Recchi et al. (2003) shows that the percentage of foreign population in Belgium was stable between 1990 and 2000 (8.8–9.2 percent), and was twice as large as in the Netherlands (4.1–5.1 percent). However, more than 60 percent of the immigrants in Belgium come from EU countries, while only 30 percent of the immigrants in the Netherlands come from EU countries. Consequently, the differences between the percentages of non-western immigrants in Belgium and the Netherlands are much smaller than between the total number of immigrants. While social discrimination is primarily related to cultural differences (e.g. Vermeij, 2006), the proportions of minorities in Belgium and the Netherlands are on comparable levels.



The most important macro differences between the macro conditions are probably the level of integration and the level of political conflict. The high school students with non-western roots in the Dutch study were of the second generation, in the Flemish study of the third generation. According to Odé (2002), only 10 percent of first-generation immigrants from Turkey and 8 percent from Morocco in the Netherlands maintain social contacts with native Dutch people, but the percentages of the second generation were already much higher (30 percent, 33 percent respectively). However, this positive trend may be swept away by a recent dramatic rise of ethnic political conflict. In Flanders the Vlaams Belang, a right-wing ethnocentric party, has steadily gained votes and influence since the 1990s and had 20.6 percent of the votes in the last local elections of October 2006 (a rise of 5.7 percent compared to the 2000 local elections). While the Dutch political discussion has been dominated by a moral panic about ethnic integration, fired up by two political murders and 9/11 (Vermeij, 2006), the discussion in the 1990s still stressed tolerance. We conclude that the Dutch DSBS data represent a context with moderate ethnic conflict, while the Flemish VLO data represent a context with strong ethnic conflict. Assuming that the effects of ethnic conflict were stronger than the difference between second and third generation, we tentatively predict ethnic boundaries in the VLO data to be stronger than in the DSBS data.

*Hypothesis 3:* The inclinations to engage more in intra-ethnic than in inter-ethnic friendships in school are stronger in Flanders in 2004/5 than in the Netherlands in 1995.

## Methods

Data from two studies in the Netherlands and Flanders were used, the Dutch Social Behaviour Study (DSBS) (Baerveldt et al., 2004) and the Vlaams Leerlingenonderzoek (VLO) study (Van Rossem and Brutsaert, 2005). High schools in the Netherlands and Flanders are usually tracked: students can choose one of several levels of secondary education. Most schools cover multiple tracks, but the classes in a school consist of students from the same track. The selected tracks in Flanders (TSO) and the Netherlands (MAVO) are of a similar, intermediate, level. TSO and MAVO students study languages, sciences and some basic technical subjects. The DSBS study included 1236 15- to 17-year-old students from 19 urban high schools in their fourth year of the MAVO level. The VLO study subsample included 1010 14- to 15-year-old students from 34 schools in their third year of the TSO level. The Dutch sample included 51 percent boys, the Flemish sample, 56 percent.

In line with a Simmelian approach, we were primarily interested in who was a 'stranger', and who was not. Also, the data did not permit

a separate analysis of different ethnic minorities in the two countries. Therefore, we distinguish only between two ethnic categories: majority and minority. The definitions and measurements of those two categories are in line with the dominant social definitions of being a stranger or not in the countries. Following the official definition of the Dutch national statistical agency CBS (2001), ethnicity was measured in the DSBS as the country of birth of both parents. For example, a respondent was considered to be Turkish only when both parents were born in Turkey. We restricted our analyses to only two categories: the indigenous Dutch majority consisting of students with two Dutch parents; and a broadly defined minority, including all students with at least one parent who was born abroad. In 1995, ethnicity would have been measured when many students with a foreign background in Flanders and the Netherlands were second generation, whereas in 2005, most students with foreign roots were third-generation immigrants. Also, as we have already indicated, in contrast to the Netherlands, the majority of foreigners in Belgium stemmed from EU countries, and usually were not considered as minority members. Therefore, ethnicity in the VLO study was measured as the country of birth of the respondent's grandmother (mother's mother). If she was born in Belgium, the Netherlands or another western European country, students were considered as majority members. If her country of birth was Spain, Italy, any other southern European country, Turkey, Morocco, any other northern African country or any Eastern European country, respondents were considered as part of the minority. When the country of grandmother's birth was unknown, respondents were considered minority when their mother's or father's nationality was non-western, when a non-western language was spoken at home or with friends, when they indicated they were Muslim or when their last name was apparently non-Belgian.

The actual existence of friendships was measured by a social network item in the questionnaire. A network consisted of a cohort of MAVO or TSO students. Most students share (or shared in the past) lessons, teachers or a part of the school building. Therefore, it is reasonable to assume that all students knew each other and had ample opportunities to become friends during their school career. We investigated only friendships within the cohort network by the following item: 'Who are your best friends in (this year of) MAVO/TSO?' Each student used a code list including all fellow students, and indicated who were his or her best friends in this list. The student then filled in his or her own code and the codes of all his or her best friends, up to a maximum of 12. Note that the Dutch networks (on average 65 students per school network) were larger than the Flemish networks (30 students on average). This is not

because the Flemish cohorts are smaller than the Dutch, but because within the Flemish cohort, only the students in the TSO track were selected. In addition, we collected information about gender and age. Finally, we asked the students 'Who are most important for you, friends inside school or outside school?'; with answering categories indicating that school friends were more, less or equally important to them than friends outside school.

For the analysis of a network containing dichotomous relationships, we used the  $p_2$  model (Lazega and Van Duijn, 1997). The  $p_2$  model was developed to explain the ties (between two individuals) in a network, using characteristics of both individuals and pairs of individuals (dyads). The  $p_2$  model is an extension of the well-known  $p_1$  model and defines a multinomial regression model of the four possible dyadic outcomes of directed friendship choices between two students, A and B: A nominates B as a friend; B nominates A; both nominate each other; neither A nor B nominates the other. The model uses dyadic explanatory variables (such as same sex and same ethnicity), and explicitly models the density and reciprocity in friendship choices. Moreover, it takes into account individual differences in sending and receiving ties through individual characteristics and random effects.

The type of dyadic characteristic used in the analysis is similarity with respect to a certain individual characteristic, such as gender. As in logistic regression, a positive effect of an individual or dyadic characteristic in the  $p_2$  model can be interpreted as an increase in the probability of a tie. For instance, a positive sender effect of gender (where boys are coded as 1, girls as 0), implies that boys have a higher probability to 'send', i.e. to report a friendship tie with others (either boys or girls). Likewise, a positive density effect of similarity with respect to gender means that the probability of a friendship tie between students with the same gender (boys–boys, or girls–girls) is higher than between boys and girls. Assuming all other parameters (random and non-random) are zero, the overall density effect is the log-odds of the probability of a tie. A density effect of a dichotomous covariate like same sex or not can then be interpreted as the log-odds ratio of a same-sex tie versus an opposite-sex tie. Similarly, a positive density effect of similarity with respect to ethnic background implies a higher probability of a friendship tie between students with the same ethnicity. The reciprocity effect can be viewed as a sort of interaction effect, combining the two separate directed relations contained in a dyad, in addition to the 'main' effects of density, and sender and receiver effects. The reciprocity effect represents the extra effect of a mutual relation in addition to the sum of two asymmetric relationships that already contain sender, receiver and density effects. A positive reciprocity parameter implies

**Table 1** *Ethnicity and Friendship at School* (N = 2240)

	VLO (Flanders)			DSBS (Netherlands)		
	Girls	Boys	Total	Girls	Boys	Total
<b>Friends</b>						
Mean number	4.52	5.31	4.96	3.33	4.00	3.67
Standard deviation	2.93	3.20	3.11	2.52	3.15	2.88
<b>Ethnicity</b>						
Native majority (%)	86.1	85.9	86.0	64.1	61.9	63.0
Minority (%)	13.9	14.1	14.0	35.9	38.1	37.0
<b>Importance of school friends</b>						
Within school (%)	6.7	5.3	5.9	9.5	9.0	9.2
Equal (%)	75.4	72.2	73.6	66.2	59.2	62.6
Outside school (%)	17.9	22.5	20.5	24.3	31.8	28.1

that symmetric dyadic outcomes are more likely than asymmetric ones. Effects of dyadic characteristics on reciprocity can only be interpreted when taking into account the accompanying density effect, and possibly corresponding sender and receiver effects.

Because the data to be analysed consist of multiple networks, the multilevel  $p_2$  model (Zijlstra et al., 2006) is applied. The multilevel  $p_2$  model combines information from multiple networks and allows for inclusion of covariates on the actor level, the dyadic level and the network level. In the multilevel model, the dependent networks are supposed to be observations from a population of networks. At the network level, the model includes a random density parameter.

## Results

As Table 1 shows, the Flemish students nominated on average five fellow students as friends, and the Dutch almost four ( $t = -10.063$ , d.f. = 2081,  $p < .001$ ). Boys nominated more friends than girls ( $t = 6.240$ , d.f. = 2236,  $p < .001$ ). The percentage of minority students was substantially higher in the Dutch than in the Flemish networks. There was no significant interaction between gender and ethnicity effects on the number of friendships. For most students having friends at school was important. For 67.6 percent of the students friends at school and friends outside school were equally important, and for 7.7 percent friends at school were more important. However, for 24.7 percent of the students, especially boys, and more so in Flanders than in the Netherlands, friends outside school were more important. These students nominated a significantly lower number of friends ( $t = -6.342$ , d.f. = 2187,  $p < .001$  one-tailed) than the other students.

**Table 2** *Friendship Nominations by Ethnicity of the Sender in Flanders (N = 1010) and the Netherlands (N = 1236). The Number of Inter- and Intra-Ethnic Friendships of Majority and Minority Members within their School Network*

	Inter-ethnic friendships		Intra-ethnic friendships	
	Mean number	% Total	Mean number	% Total
Flanders				
Majority	0.40	7.9	4.74	92.1
Minority	2.17	54.6	1.80	45.4
Netherlands				
Majority	0.91	24.8	2.77	75.2
Minority	1.21	34.1	2.34	65.9

**Hypothesis 1: The Existence of Ethnic Boundaries**

The ethnic partition of friendship is presented in Table 2. The table shows that majority students have predominantly intra-ethnic friendships with other majority students. In the Flemish networks, 92.1 percent of the friends of majority students were also majority students; in the Dutch networks this percentage (75.2 percent) was substantially lower. Also, the minority students in the Netherlands had substantially more minority friends (65.9 percent) than majority friends. However, the minority students in Flanders had more friendships (54.6 percent) with majority students than with minority students. Note, however, that the number of intra-ethnic friendships of minority members is probably overrated in a strict sense because friendships between for instance Moroccan and Turkish students were defined as intra-ethnic. Thus, the ethnic diversity of the friendships of minority members is even larger than Table 2 suggests.

The ethnic partition of friendships is in itself an important social phenomenon, because it illustrates how ethnic integration differs between the majority and minorities. However, it is not justified to read into Table 2 that integration is mainly an activity for minority members. Table 2 could merely reflect the balance of available relationships, which of course is dominated by the majority, i.e. the Dutch or Flemish students. To test the existence of ethnic boundaries we need to control the number of actual relationships for the opportunity structure. Because the students in these networks had ample opportunity to meet each other on a positive basis, we controlled for the number of potential relationships or dyads in the networks.

Table 3 shows the density of intra-ethnic and inter-ethnic friendships in the Flemish and Dutch school networks. The density is the percentage of dyads (potential relationships in the class) of a certain category that are actual friendships. The densities in the Flemish networks are higher than in the Dutch networks. Table 3 demonstrates the existence of ethnic

**Table 3** *The Density of Inter-Ethnic and Intra-Ethnic Friendships of Majority and Minority members, i.e. the Number of Actual Relationships in Percentages of the Number of Potential Relationships (Dyads) per Category*

	Inter-ethnic friendships	Intra-ethnic friendships
Flanders		
Majority	12.0	11.9
Minority	10.6	16.9
Netherlands		
Majority	4.2	5.7
Minority	3.2	7.7

boundaries in the Netherlands, where the density of intra-ethnic friendships is larger than the density of inter-ethnic friendships. The Flemish network seems to show a mixed picture. The density of the intra-ethnic friendships of minority members is higher than that of majority members, but the densities are almost equal for the majority members. This might well be an effect of the much smaller minority groups in the Flemish networks. Note that Table 3 suggests a different picture than Table 2 about inclinations to choose intra-ethnic friendships. Whereas Table 2 suggests that majority members have the strongest boundaries, Table 3 implies that the boundaries of minority members are stronger. Note that Table 3 may overestimate the boundaries of minority members because no distinction is made between different ethnic minority categories. However, Baerveldt et al. (2004) showed such boundaries also to be strong when Moroccan and Turkish students are distinguished as ethnic categories.

### ***Hypotheses 2 and 3: The Effect of Individual Inclinations on Intra-Ethnic Relationships, and Differences between Flemish and Dutch Networks***

As mentioned earlier, the existence of ethnic boundaries does not automatically mean that the students have a greater inclination to choose intra-ethnic rather than inter-ethnic relationships. Ethnic boundaries can emerge for other reasons, and therefore we have to control for several important variables on the individual level (sex and the importance of school friends compared to other friends), the dyadic level (for instance sex similarity or the inclination to reciprocate positive relationships), or the network level (network size, density, network composition). In the multilevel  $p_2$  analysis, the important variables on the individual and dyadic level were incorporated, while the differences in density (due to differences in network size) were also taken into account.

**Table 4** *Predicting Intra-Ethnic and Inter-Ethnic Friendship Choice. Multilevel  $p_2$  Analyses of Friendship Relationships in 34 Flemish and 19 Dutch Students' Networks*

Parameter in the $p_2$ model	Values over 34 Flemish schools		Values over 19 Dutch schools	
	Mean <sup>a</sup>	SD	Mean <sup>b</sup>	SD
Density (overall)	<b>-2.35</b>	.06	<b>-3.52</b>	.07
Similarity ethnicity <sup>b</sup>	<b>.20</b>	.08	<b>.73</b>	.06
Similarity gender	<b>.93</b>	.06	<b>1.32</b>	.06
Reciprocity (overall)	<b>3.60</b>	.08	<b>4.27</b>	.09
Similarity ethnicity <sup>b</sup>	<b>.41</b>	.17	<b>-.27</b>	.14
Similarity gender	<b>-.21</b>	.13	<b>-.45</b>	.16
Sender				
Ethnicity (minority)	-.05	.15	-.07	.08
Gender (boy)	.12	.08	<b>.20</b>	.07
Most important friends outside school	.17	.13	<b>-.32</b>	.08
Most important friends at school	<b>-.18</b>	.09	-.16	.10
Receiver				
Ethnicity (minority)	<b>.26</b>	.12	<b>.35</b>	.07
Gender (boy)	.02	.08	-.02	.07
Most important friends outside school	.06	.12	<b>-.16</b>	.07
Most important friends at school	-.14	.08	<b>.26</b>	.09
Variance random effect density	.30		.08	

<sup>a</sup> Bold figures indicate significant ( $p < .05$ ) estimates.<sup>b</sup> Students fall in one of two categories: majority or minority.

Table 4 shows the results of the estimation of the  $p_2$  model for all the school networks. The first column contains the name of the parameter, for instance the gender similarity effect on density. The second and fourth column contain the parameter values over 34 Flemish students' networks and 19 Dutch students' networks respectively. The standard errors of the parameter values are given in the third and fifth columns.

Some statistics in Table 4 can be interpreted as the result of controlling for important effects. Two parameters represent two general network effects always included in the  $p_2$  model: the overall density effect and the overall reciprocity effect. The overall density effect was negative, indicating that the networks were all rather sparse, and the overall reciprocity effect was positive, indicating that symmetric relationships were more likely than asymmetric ones. We controlled for the importance of school friends, because it is related with the number of relationships at school. While it is possible that school friends are less important because students

already have a satisfying number of relationships at school, it might also be the case that the individual need for relationships at school is less because friends outside school are more important. Therefore, we included this variable as sender and receiver effect in the model. Table 4 shows that this variable was important for the explanation of the sender effect. The results for the Dutch data are relatively easy to interpret. The corresponding positive significant sender effect of  $-.32$  in the fourth column indicates that Dutch students who found their friends outside school most important tended to report fewer friendships at school. The corresponding significant receiver effects of  $-.16$  and  $.26$  indicate that students were indicated more often as a friend when they prefer school friends. The results from the Flemish data are less clear. Three of the four corresponding effects are not significant. There is a somewhat unexpected moderate negative sender effect of having most important friends at school, indicating that students who find it most important to have friends at school tend to have fewer friends at school than students who did not indicate such preference.

The table further shows the effect of individual and dyadic gender effects. The sender effect of gender (boy) over the networks is positive, indicating that the boys on average nominated more friends than girls. The receiver effects were not significant, which means that, apart from the effect of boys nominating more friends and in particular boys, boys and girls were as attractive as friends. The positive estimates of the density similarity effects of gender indicate that there were more friendships in same-sex dyads, in both the Flemish and the Dutch networks. The negative reciprocity similarity effects indicate that the tendency to reciprocate friendship ties is somewhat reduced in comparison to different-sex ties, although still clearly positive.

Finally, Table 4 shows the effects of ethnicity (majority versus minority). The sender effects regarding ethnicity are not significant in either country, but the receiver effects are, indicating that minority students were chosen more often as friends. The positive estimates of the density similarity effects of ethnicity, controlled for all other effects discussed so far, indicate that students from the same ethnic category have a higher probability of choosing each other as friends. This can be interpreted as a confirmation of Hypothesis 2, that they were inclined to choose intra-ethnic over inter-ethnic friendships, because the effect is controlled for by important alternative explanations. Note that the effect seems to be larger in Dutch networks, but that related effects, like density, also differ between the Dutch and Flemish networks. To get an idea of what these parameters imply, assume that all parameters are zero except for the overall density effect and the density similarity effect of ethnicity. The modelled probability of a majority-minority tie is then  $.087$  for the Belgian networks and



.029 for the Dutch networks, which increases to .104 and .058, respectively, for the probability of a tie within the same ethnic background. Assuming the density effect for similar gender is also non-zero, for same-sex relationships the probability for a tie within the same ethnic background compared to outside the background increases from .195 to .228 for the Belgian networks and from .100 to .187 for the Dutch networks. The estimates of the reciprocity similarity effects of ethnicity differ between the Flemish and Dutch networks, where the reciprocity in Flemish same-ethnicity dyads was increased, whereas it was seemingly reduced in Dutch same-ethnicity dyads.

## Conclusions and Discussion

In the present study we tested the evidence for ethnic boundaries in students' networks in 34 Flemish and 19 Dutch high schools. Each network consisted of all students of a certain year of an intermediate level of education (track) in a school. Data about ethnicity and gender and friendships with fellow students were collected through a survey.

The ethnic composition of the students' personal networks differed between students from the majority and from the minorities: students from the majority predominantly had friendships within their own ethnic category, but minority students often had more inter-ethnic than intra-ethnic friendships. However, the ethnic composition of personal networks is not an indication of ethnic boundaries, because boundaries refer to the probability of a friendship, given the opportunity structure. The density of intra-ethnic friendships in the Flemish and Dutch networks was larger than the density of inter-ethnic friendships, indicating the presence of ethnic boundaries. In contrast with the composition of the personal networks, the density of intra-ethnic friendships of students from the majority was lower than that of students from the minorities.

Ethnic boundaries do not always reflect personal inclinations to choose intra-ethnic friendships; they can come into being for different causes, like a preference for same-gender friendships combined with a strong overlap between gender and ethnicity in the network. Therefore, we controlled the effect of intra-ethnic choice inclinations on actual friendships for network effects of gender and the importance of having friends at school. We used a multilevel  $p_2$  model for the analysis, because it can differentiate between several types of network effects, like the tendency to reciprocate ties or the popularity of students with different characteristics. The analysis showed positive effects of the importance of school friends on the number of friendships in the Dutch networks and some weak effects in the Flemish networks. Boys befriended boys over girls, and girls befriended girls. This was by far the largest effect in our analysis, which

is in line with the literature. The analysis revealed substantial effects of personal inclinations to choose intra-ethnic friendships on the actual friendship network. This is in line with our hypothesis, and also some recent findings in similar network studies on ethnicity.

Our hypothesis that inclinations to engage in intra-ethnic over inter-ethnic friendships would be weaker in the Dutch than in the Flemish networks is not supported. The results even suggest that these inclinations were stronger in the Dutch than in the Flemish networks. However, at least two methodological problems might be of consequence here. First, international comparative research typically faces the problems of cross-cultural validity. Using the exact same questionnaire in both countries rules out one source of potential differences. It was found, however, that the Flemish students nominated a higher number of friends and rated the importance of friends at and outside school somewhat differently. These differences were controlled for by including parameters for these effects in the analysis. Also, the frequencies and gender effects on friendship formation were similar. Consequently, we do not expect any significant effect of friendship measurement on the results. A larger difference between the two countries may come from the different definition and measurement of ethnicity in both countries, where the Flemish study primarily dealt with third-generation and the Dutch with second-generation immigrants. The more distinctive Dutch measure of ethnicity may be the explanation for the stronger ethnic boundaries. Second, while the Dutch and Flemish school systems are by and large similar, and the (Dutch) MAVO and (Flemish) TSO tracks are of a comparable educational level, there are also some relevant differences. For instance, the MAVO networks were systematically larger than the TSO networks. One could reason that students have more opportunity to be more meticulous in choosing friends in larger networks. Consequently, the actual network could be expected to be more in line with preferences. This is in line with the overall reciprocity effect and several gender effects being stronger in the Dutch networks. Accordingly, the larger size of the Dutch networks could explain part of the found differences in ethnic boundaries.

Apart from the aforementioned methodological reasons, the differences might also be explained by the (relative) number of ethnic minorities. The proportion of minority students is larger in Dutch networks. The literature provides two competing mechanisms, with no decisive empirical evidence (Vermeij, 2006). According to contact theory, ethnic boundaries should become weaker when the networks contain more students from minorities. In contrast, according to social identity theory, a larger number of minority students would strengthen the boundaries. Our empirical findings are more in line with the latter theory, but, as we have already stated, can also be explained by different definitions of ethnicity and by

structural effects of the Dutch and Flemish school systems on the students' networks. Also, the ongoing process of integration per generation may have caused the third-generation Flemish students to be less inclined to choose intra-ethnic friendships than the second-generation Dutch students. The relative tolerance in the Netherlands in 1995/6 compared to Flanders in 2004/5, if it ever existed, was not strong enough to outweigh these effects.

## References

- Allport, W. G. (1954) *The Nature of Prejudice*. Cambridge, MA: Addison-Wesley.
- Baerveldt, C. and Snijders, T. A. B. (1994) 'Influences on and from the Segmentation of Networks: Hypotheses and Tests', *Social Networks* 16(3): 213–32.
- Baerveldt, C., van Duijn, M. A. J., Vermeij, L. and van Hemert, D. A. (2004) 'Ethnic Boundaries and Personal Choice: Assessing the Influence of Individual Inclinations to Choose Intra-Ethnic Relationships on Pupils' Networks', *Social Networks* 26: 55–74.
- CBS (Centraal Bureau voor de Statistiek) (2001) *Allochtonen in Nederland*. Voorburg: CBS.
- Clark, M. L. and Ayers, M. (1992) 'Friendship Similarity during Early Adolescence: Gender and Racial Patterns', *Journal of Psychology* 126(4): 393–405.
- DuBois, D. L. and Hirsch, B. J. (1990) 'School and Neighborhood Friendship Patterns of Blacks and Whites in Early Adolescence', *Child Development* 61: 524–36.
- Fong, E. and Isajiw, W. W. (2000) 'Determinants of Friendship Choices in Multiethnic Society', *Sociological Forum* 15(2): 249–71.
- Granovetter, M. (1986) 'The Micro-Structure of School Desegregation', in J. Prager, D. Longshore and M. Seeman (eds) *School Desegregation Research: New Directions in Situational Analysis*, pp. 81–110. New York: Plenum Press.
- Grimmeau, J.-P. (1992) 'Vagues d'immigration et localisation des étrangers en Belgique', in A. Morelli (ed.) *Histoire des étrangers et de l'immigration en Belgique de la préhistoire à nos jours*, pp. 104–18. Brussels: Editions Vie Ouvrière.
- Hallinan, M. T. (1982) 'Classroom Racial Composition and Children's Friendships', *Social Forces* 61(1): 56–72.
- Hallinan, M. T. and Smith, S. S. (1985) 'The Effects of Classroom Racial Composition on Students' Interracial Friendliness', *Social Psychology Quarterly* 48(1): 3–16.
- Hallinan, M. T. and Williams, R. A. (1989) 'Interracial Friendship Choices in Secondary Schools', *American Sociological Review* 54: 67–78.
- Howes, C. and Wu, F. (1990) 'Peer Interactions and Friendships in an Ethnically Diverse School Setting', *Child Development* 61(2): 537–41.
- Joyner, K. and Kao, G. (2000) 'School Racial Composition and Adolescent Racial Homophily', *Social Science Quarterly* 81(3): 810–25.

- Kandel, D. B. (1978) 'Homophily, Selection, and Socialization in Adolescent Friendships', *American Journal of Sociology* 84(2): 427–36.
- Kassenberg, A. (2002) *Wat Scholieren Bindt: Sociale Gemeenschap in Scholen*. Amsterdam: Rijksuniversiteit Groningen (RUG).
- Kistner, J., Metzler, A., Gatlin, D. and Risi, S. (1993) 'Classroom Racial Proportions and Children's Peer Relations: Race and Gender Effects', *Journal of Educational Psychology* 85(3): 446–52.
- Kubitschek, W. N. and Hallinan, M. T. (1998) 'Tracking and Students' Friendships', *Social Psychology Quarterly* 61(1): 1–15.
- Laquière, M. (1997) 'Een Echt Non-Discriminatiebeleid: Een Garantie Voor De Toekomst Van Onze Kinderen', in *Schoolleiding En Begeleiding. Visies En Ontwikkelingen*, Vol. 19, pp. 53–80. Diegem: Kluwer.
- Lazega, E. and van Duijn, M. A. J. (1997) 'Position in Formal Structure, Personal Characteristics and Choices of Advisors in a Law Firm: A Logistic Regression Model for Dyadic Network Data', *Social Networks* 19: 375–97.
- McPherson, J. M., Smith-Lovin, L. and Cook, J. M. (2001) 'Birds of a Feather: Homophily in Social Networks', *Annual Review of Sociology* 27: 415–44.
- Moody, J. (2001) 'Race, School Integration, and Friendship Segregation in America', *American Journal of Sociology* 107(3): 679–716.
- Mouw, T. and Entwisle, B. (2006) 'Residential and Interracial Friendship in Schools', *American Journal of Sociology* 112(2): 394–441.
- Odé, A. W. M. (2002) *Ethnic-Cultural and Socio-Economic Integration in the Netherlands: A Comparative Study of Mediterranean and Caribbean Minority Groups*. Assen: Koninklijke van Gorcum.
- Patchen, M. (1982) *Black-White Contact in Schools: Its Social and Academic Effects*. West Lafayette, IN: Purdue University Press.
- Pettigrew, T. F. (1986) 'The Intergroup Contact Hypothesis Reconsidered', in M. Hewstone and R. Brown (eds) *Contact and Conflict in Intergroup Encounters*, pp. 169–95. Oxford: Basil Blackwell.
- Pettigrew, T. F. (1998) 'Intergroup Contact Theory', *Annual Review of Psychology* 49(1): 65–85.
- Pettigrew, T. F. and Tropp, L. R. (2000) 'Does Intergroup Contact Reduce Prejudice? Recent Meta-Analytic Findings', in S. Oskamp (ed.) *Reducing Prejudice and Discrimination*, pp. 93–114. Mahwah, NJ: Lawrence Erlbaum.
- Quillian, L. and Campbell, M. E. (2003) 'Beyond Black and White: The Present and Future of Multiracial Friendship Segregation', *American Sociological Review* 68: 540–66.
- Recchi, E., Tambini, D., Baldoni, E., Williams, D., Surak, K. and Favell, A. (2003) *Intra-EU Migration: A Socio-Demographic Overview*, Pioneur Working Paper No. 3; at: [www.obets.ua.es/pioneur/documentos\\_public.php](http://www.obets.ua.es/pioneur/documentos_public.php)
- Rican, P. (1996) 'Sociometric Status of Gypsy Children in Ethnically Mixed Classes', *Studia Psychologica* 38(3): 177–83.
- Schofield, J. W. (1979) 'The Impact of Positively Structured Contact on Intergroup Behavior: Does it Last under Adverse Conditions?', *Social Psychology Quarterly* 42(3): 280–4.

- Schofield, J. W. (1982) *Black and White in School: Trust, Tension or Tolerance?* New York: Praeger.
- Schofield, J. W. (1986) 'Black-White Contact in Desegregated Schools', in M. Hewstone and R. Brown (eds) *Contact and Conflict in Intergroup Encounters*, pp. 79–92. Oxford: Basil Blackwell.
- Schofield, J. W. and Sagar, H. A. (1977) 'Peer Interaction Patterns in an Integrated Middle School', *Sociometry* 40(2): 130–8.
- Shrum, W., Cheek, N. H. and Hunter, S. M. (1988) 'Friendship in School: Gender and Racial Homophily', *Sociology of Education* 61(4): 227–39.
- Smith, A. and Schneider, B. H. (2000) 'The Inter-Ethnic Friendships of Adolescent Students: A Canadian Study', *International Journal of Intercultural Relations* 24: 247–58.
- Tajfel, H. and Turner, J. (1979) 'An Integrative Theory of Intergroup Conflict', in W. G. Austin and S. Worchel (eds) *The Social Psychology of Intergroup Relations*, pp. 33–47. Monterey, CA: Brooks/Cole.
- Van Rossem, R. and Brutsaert, H. (2005) *Vlaams Leerlingenonderzoek 2004–2005*. Ghent: Universiteit Gent, Vakgroep Sociologie.
- Verkuyten, M., Hagendoorn, L. and Masson, K. (1996) 'The Ethnic Hierarchy among Majority and Minority Youth in the Netherlands', *Journal of Applied Social Psychology* 22(12): 1104–19.
- Vermeij, L. (2006). *What's Cooking? Cultural Boundaries among Dutch Teenagers of Different Ethnic Origins in the Context of School*. Veenendaal: UniversalPress.
- Woods, P. and Grugeon, E. (1990) 'Pupils and "Race": Integration and Disintegration in Primary Schools', *British Journal of Educational Psychology* 11(3): 309–27.
- Zijlstra, B. J. H., van Duijn, M. A. J. and Snijders, T. A. B. (2006) 'The Multilevel P2 Model: A Random Effects Model for the Analysis of Multiple Social Networks', *Methodology* 2: 42–7.

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